

SEQUENCE LISTING

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<120> Recombinant Expression Vectors for Functional Nav1.9 Sodium Channels

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<212> DNA
<213> Rattus norvegicus

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	Leu	Leu	Asn	Pro	Met	Leu	Glu	Ala	Lys	Glu	His	Cys	Asn	Ser	Ser
					1540						1545				
tcc 1550	caa	gac	agc	tgt	cag	cag	ccg	cag	ata	gcc	gtc	gtc	tac	ttc	4743
	Ser	Gln	Asp	Ser	Cys	Gln	Gln	Pro	Gln	Ile	Ala	Val	Val	Tyr	Phe
					1555						1560				
gtc 1565	agt	tac	atc	atc	atc	tcc	ttc	ctc	atc	gtg	gtc	aac	atg	tac	4788
	Val	Ser	Tyr	Ile	Ile	Ile	Ser	Phe	Leu	Ile	Val	Val	Asn	Met	Tyr
					1570						1575				
atc 1580	gct	gtg	atc	ctc	gag	aac	ttc	aac	aca	gcc	acg	gag	gag	agc	4833
	Ile	Ala	Val	Ile	Leu	Glu	Asn	Phe	Asn	Thr	Ala	Thr	Glu	Glu	Ser
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gag 1595	gac	cct	ctg	gga	gag	gac	gac	ttt	gaa	atc	ttc	tat	gag	gtc	4878
	Glu	Asp	Pro	Leu	Gly	Glu	Asp	Asp	Phe	Glu	Ile	Phe	Tyr	Glu	Val
					1600						1605				
tgg 1610	gag	aag	ttt	gac	ccc	gag	gag	tgc	cag	ttc	atc	cag	tat	tgc	4923
	Trp	Glu	Lys	Phe	Asp	Pro	Glu	Ala	Ser	Gln	Phe	Ile	Gln	Tyr	Ser
					1615						1620				
gcc 1625	ctc	tct	gac	ttt	gag	gac	gcc	ctg	ccg	gag	ccg	ttg	cgt	gtg	4968
	Ala	Leu	Ser	Asp	Phe	Ala	Asp	Ala	Leu	Pro	Glu	Pro	Leu	Arg	Val

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Ala Lys Pro Asn Lys Phe	Gln Phe Leu Val Met	Asp Leu Pro Met			
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Val Met Gly Asp Arg Leu	His Cys Met Asp Val	Leu Phe Ala Phe			
1655	1660	1665			
act acc agg gtc ctc ggg	gac tcc agc ggc ttg	gat acc atg aaa	5103		
Thr Thr Arg Val Leu Gly	Asp Ser Ser Gly Leu	Asp Thr Met Lys			
1670	1675	1680			
acc atg atg gag gag aag	ttt atg gag gcc aac	cct ttt aag aag	5148		
Thr Met Met Glu Glu Lys	Phe Met Glu Ala Asn	Pro Phe Lys Lys			
1685	1690	1695			
ctc tac gag ccc ata gtc	acc acc acc aag agg	aag gag gag gag	5193		
Leu Tyr Glu Pro Ile Val	Thr Thr Thr Lys Arg	Lys Glu Glu Glu			
1700	1705	1710			
caa ggc gcc gcc gtc atc	cag agg gcc tac cgg	aaa cac atg gag	5238		
Gln Gly Ala Ala Val Ile	Gln Arg Ala Tyr Arg	Lys His Met Glu			
1715	1720	1725			
aag atg gtc aaa ctg agg	ctg aag gac agg tca	agt tca tcg cac	5283		
Lys Met Val Lys Leu Arg	Leu Lys Asp Arg Ser	Ser Ser Ser His			
1730	1735	1740			
cag gtg ttt tgc aat gga	gac ttg tcc agc ttg	gat gtg gcc aag	5328		
Gln Val Phe Cys Asn Gly	Asp Leu Ser Ser Leu	Asp Val Ala Lys			
1745	1750	1755			
gtc aag gtt cac aat gac	tga accctcatct ccaccctac	ctcactgcct	5379		
Val Lys Val His Asn Asp					
1760	1765				
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Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
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Leu Tyr Gly Asp Ile Pro Pro Glu Leu Val Ala Lys Pro Leu Glu Asp
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Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
85 90 95

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
100 105 110

Gly Pro Phe Asn Pro Leu Arg Ser Leu Met Ile Arg Ile Ser Val His
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Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
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Phe Met Ala Asn Ser Met Glu Arg Ser Phe Asp Asn Asp Ile Pro Glu
145 150 155 160

Tyr Val Phe Ile Gly Ile Tyr Ile Leu Glu Ala Val Ile Lys Ile Leu
165 170 175

Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Phe Leu Arg Asp Pro Trp
180 185 190

Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Thr Cys Phe
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Pro Gly Ser Gln Val Asn Leu Ser Ala Leu Arg Thr Phe Arg Val Phe
210 215 220

Arg Ala Leu Lys Ala Ile Ser Val Ile Ser Gly Leu Lys Val Ile Val
 225 230 235 240

Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asp Val Met Val Leu
 245 250 255

Thr Leu Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln Gln Leu Phe
 260 265 270

Met Gly Ile Leu Asn Gln Lys Cys Ile Lys His Asn Cys Gly Pro Asn
 275 280 285

Pro Ala Ser Asn Lys Asp Cys Phe Glu Lys Glu Lys Asp Ser Glu Asp
 290 295 300

Phe Ile Met Cys Gly Thr Trp Leu Gly Ser Arg Pro Cys Pro Asn Gly
 305 310 315 320

Ser Thr Cys Asp Lys Thr Thr Leu Asn Pro Asp Asn Asn Tyr Thr Lys
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Phe Asp Asn Phe Gly Trp Ser Phe Leu Ala Met Phe Arg Val Met Thr
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Gln Asp Ser Trp Glu Arg Leu Tyr Arg Gln Ile Leu Arg Thr Ser Gly
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Tyr Leu Leu Asn Leu Thr Leu Ala Val Val Thr Met Ala Tyr Glu Glu
 385 390 395 400

Gln Asn Arg Asn Val Ala Ala Glu Thr Glu Ala Lys Glu Lys Met Phe
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Gln Glu Ala Gln Gln Leu Leu Arg Glu Glu Lys Glu Ala Leu Val Ala
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Met Gly Ile Asp Arg Ser Ser Leu Asn Ser Leu Gln Ala Ser Ser Phe
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Ser Pro Lys Lys Arg Lys Phe Phe Gly Ser Lys Thr Arg Lys Ser Phe
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Phe Met Arg Gly Ser Lys Thr Ala Gln Ala Ser Ala Ser Asp Ser Glu
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Asp Asp Ala Ser Lys Asn Pro Gln Leu Leu Glu Gln Thr Lys Arg Leu
485 490 495

Ser Gln Asn Leu Pro Val Asp Leu Phe Asp Glu His Val Asp Pro Leu
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His Arg Gln Arg Ala Leu Ser Ala Val Ser Ile Leu Thr Ile Thr Met
515 520 525

Gln Glu Gln Glu Lys Phe Gln Glu Pro Cys Phe Pro Cys Gly Lys Asn
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Leu Ala Ser Lys Tyr Leu Val Trp Asp Cys Ser Pro Gln Trp Leu Cys
545 550 555 560

Ile Lys Lys Val Leu Arg Thr Ile Met Thr Asp Pro Phe Thr Glu Leu
565 570 575

Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Val Glu
580 585 590

His His Asn Met Asp Asp Asn Leu Lys Thr Ile Leu Lys Ile Gly Asn
595 600 605

Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile
610 615 620

Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn Val Phe Asp
625 630 635 640

Ser Ile Val Ala Leu Leu Ser Leu Ala Asp Val Leu Tyr Asn Thr Leu
645 650 655

Ser Asp Asn Asn Arg Ser Phe Leu Ala Ser Leu Arg Val Leu Arg Val
660 665 670

Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile

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Ile Val Val Phe Ile Phe Ser Val Val Gly Met Arg Leu Phe Gly Thr				
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				720
Lys Phe Asn Lys Thr Ala Tyr Ala Thr Gln Glu Arg Pro Arg Arg Arg				
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				735
Trp His Met Asp Asn Phe Tyr His Ser Phe Leu Val Val Phe Arg Ile				
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				750
Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Gly Cys Met Gln Asp Met				
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				765
Asp Gly Ser Pro Leu Cys Ile Ile Val Phe Val Leu Ile Met Val Ile				
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				780
Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn Ser				
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				795
				800
Phe Ser Asn Glu Glu Lys Asp Gly Ser Leu Glu Gly Glu Thr Arg Lys				
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				815
Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Arg Arg Ala Phe Ser Phe				
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				830
Met Leu His Ala Leu Gln Ser Phe Cys Cys Lys Lys Cys Arg Arg Lys				
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				845
Asn Ser Pro Lys Pro Lys Glu Thr Thr Glu Ser Phe Ala Gly Glu Asn				
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				860
Lys Asp Ser Ile Leu Pro Asp Ala Arg Pro Trp Lys Glu Tyr Asp Thr				
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				875
				880
Asp Met Ala Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro Leu				
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				895
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Pro Thr Ser Gln His Ser Ala Gly Val Gln Ala Gly Asp Leu Pro Pro
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Glu Thr Lys Gln Leu Thr Ser Pro Asp Asp Gln Gly Val Glu Met Glu
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Val Phe Ser Glu Glu Asp Leu His Leu Ser Ile Gln Ser Pro Arg Lys
 945 950 955 960

Lys Ser Asp Ala Val Ser Met Leu Ser Glu Cys Ser Thr Ile Asp Leu
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Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Lys Lys Gln
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Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser Cys His Phe Leu Cys His
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 1010 1015 1020

Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser
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Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile Phe
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Glu Asp Val Asn Leu Pro Ser Arg Pro Gln Val Glu Lys Leu Leu
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Arg Cys Thr Asp Asn Ile Phe Thr Phe Ile Phe Leu Leu Glu Met
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Ile Leu Lys Trp Val Ala Phe Gly Phe Arg Arg Tyr Phe Thr Ser
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Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Val Val Ser Val Leu
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Ser Leu Met Asn Leu Pro Ser Leu Lys Ser Phe Arg Thr Leu Arg
 1115 1120 1125

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1145						1150					1155			
Val	Leu	Leu	Val	Cys	Leu	Ile	Phe	Trp	Leu	Val	Phe	Cys	Ile	Leu
1160						1165					1170			
Gly	Val	Asn	Leu	Phe	Ser	Gly	Lys	Phe	Gly	Arg	Cys	Ile	Asn	Gly
1175						1180					1185			
Thr	Asp	Ile	Asn	Met	Tyr	Leu	Asp	Phe	Thr	Glu	Val	Pro	Asn	Arg
1190						1195					1200			
Ser	Gln	Cys	Asn	Ile	Ser	Asn	Tyr	Ser	Trp	Lys	Val	Pro	Gln	Val
1205						1210					1215			
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1220						1225					1230			
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1250						1255					1260			
Ala	Tyr	Leu	Tyr	Phe	Val	Val	Phe	Ile	Ile	Phe	Gly	Ser	Phe	Phe
1265						1270					1275			
Thr	Leu	Asn	Leu	Phe	Ile	Gly	Val	Ile	Ile	Asp	Asn	Phe	Asn	Gln
1280						1285					1290			
Gln	Gln	Lys	Lys	Leu	Gly	Gly	Gln	Asp	Ile	Phe	Met	Thr	Glu	Glu
1295						1300					1305			
Gln	Lys	Lys	Tyr	Tyr	Asn	Ala	Met	Lys	Lys	Leu	Gly	Thr	Lys	Lys
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Pro	Gln	Lys	Pro	Ile	Pro	Arg	Pro	Leu	Asn	Lys	Cys	Gln	Ala	Phe
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Val	Phe	Asp	Leu	Val	Thr	Ser	Gln	Val	Phe	Asp	Val	Ile	Ile	Leu
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1475						1480					1485			
Ile	Tyr	Ala	Ile	Phe	Gly	Met	Ser	Trp	Phe	Ser	Lys	Val	Lys	Lys
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1520						1525					1530			
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Tyr Ile Ala Val Ile Leu Glu	Asn Phe Asn Thr Ala Thr Glu Glu			
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Ser Glu Asp Pro Leu Gly Glu	Asp Asp Phe Glu Ile Phe Tyr Glu			
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Val Trp Glu Lys Phe Asp Pro	Glu Ala Ser Gln Phe Ile Gln Tyr			
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Ser Ala Leu Ser Asp Phe Ala	Asp Ala Leu Pro Glu Pro Leu Arg			
1625	1630	1635		
Val Ala Lys Pro Asn Lys Phe	Gln Phe Leu Val Met Asp Leu Pro			
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Met Val Met Gly Asp Arg Leu	His Cys Met Asp Val Leu Phe Ala			
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Phe Thr Thr Arg Val Leu Gly	Asp Ser Ser Gly Leu Asp Thr Met			
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Lys Thr Met Met Glu Glu Lys	Phe Met Glu Ala Asn Pro Phe Lys			
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Lys Leu Tyr Glu Pro Ile Val	Thr Thr Thr Lys Arg Lys Glu Glu			
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Glu Gln Gly Ala Ala Val Ile	Gln Arg Ala Tyr Arg Lys His Met			
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Glu Lys Met Val Lys Leu Arg	Leu Lys Asp Arg Ser Ser Ser Ser			
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tta gcc att aga gtc tca gtc cat tca ttg ttc agc atg ttc att atc      438
Leu Ala Ile Arg Val Ser Val His Ser Leu Phe Ser Met Phe Ile Ile
                               125                               130                               135

ggc acc gtt atc atc aac tgc gtg ttc atg gct aca ggg cct gct aaa      486
Gly Thr Val Ile Ile Asn Cys Val Phe Met Ala Thr Gly Pro Ala Lys
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Asn Ser Asn Ser Asn Asn Thr Asp Ile Ala Glu Cys Val Phe Thr Gly
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att tat att ttt gaa gct ttg att aaa ata ttg gca aga ggt ttc att      582
Ile Tyr Ile Phe Glu Ala Leu Ile Lys Ile Leu Ala Arg Gly Phe Ile
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Arg Ala Leu Ser Ala Val Ser Ile Leu Thr Ile Thr Met Lys Glu Gln	
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Glu Lys Ser Gln Glu Pro Cys Leu Pro Cys Gly Glu Asn Leu Ala Ser	
540 545 550	
aag tac ctc gtg tgg aac tgt tgc ccc cag tgg ctg tgc gtt aag aag	1734
Lys Tyr Leu Val Trp Asn Cys Cys Pro Gln Trp Leu Cys Val Lys Lys	
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gtc ctg aga act gtg atg act gac ccg ttt act gag ctg gcc atc acc	1782
Val Leu Arg Thr Val Met Thr Asp Pro Phe Thr Glu Leu Ala Ile Thr	
570 575 580	
atc tgc atc atc atc aac act gtc ttc ttg gcc atg gag cat cac aag	1830
Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Met Glu His His Lys	
585 590 595 600	
atg gag gcc agt ttt gag aag atg ttg aat ata ggg aat ttg gtt ttc	1878
Met Glu Ala Ser Phe Glu Lys Met Leu Asn Ile Gly Asn Leu Val Phe	
605 610 615	
act agc att ttt ata gca gaa atg tgc cta aaa atc att gcg ctc gat	1926
Thr Ser Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile Ala Leu Asp	
620 625 630	
ccc tac cac tac ttt cgc cga ggc tgg aac att ttt gac agc att gtt	1974
Pro Tyr His Tyr Phe Arg Arg Gly Trp Asn Ile Phe Asp Ser Ile Val	
635 640 645	
gct ctt ctg agt ttt gca gat gta atg aac tgt gta ctt caa aag aga	2022

Ala	Leu	Leu	Ser	Phe	Ala	Asp	Val	Met	Asn	Cys	Val	Leu	Gln	Lys	Arg		
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Ser	Trp	Pro	Phe	Leu	Arg	Ser	Phe	Arg	Val	Leu	Arg	Val	Phe	Lys	Leu		
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gcc	aaa	tcc	tgg	cca	act	ttg	aac	aca	cta	att	aag	ata	atc	ggc	aac	2118	
Ala	Lys	Ser	Trp	Pro	Thr	Leu	Asn	Thr	Leu	Ile	Lys	Ile	Ile	Gly	Asn		
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tct	gtc	gga	gcc	ctt	gga	agc	ctg	act	gtg	gtc	ctg	gtc	att	gtg	atc	2166	
Ser	Val	Gly	Ala	Leu	Gly	Ser	Leu	Thr	Val	Val	Leu	Val	Ile	Val	Ile		
			700					705					710				
ttt	att	ttc	tca	gta	gtt	ggc	atg	cag	ctt	ttt	ggc	cgt	agc	ttc	aat	2214	
Phe	Ile	Phe	Ser	Val	Val	Gly	Met	Gln	Leu	Phe	Gly	Arg	Ser	Phe	Asn		
		715					720					725					
tcc	caa	aag	agt	cca	aaa	ctc	tgt	aac	ccg	aca	ggc	ccg	aca	gtc	tca	2262	
Ser	Gln	Lys	Ser	Pro	Lys	Leu	Cys	Asn	Pro	Thr	Gly	Pro	Thr	Val	Ser		
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tgt	tta	cgg	cac	tgg	cac	atg	ggg	gat	ttc	tgg	cac	tcc	ttc	cta	gtg	2310	
Cys	Leu	Arg	His	Trp	His	Met	Gly	Asp	Phe	Trp	His	Ser	Phe	Leu	Val		
745				750					755					760			
gta	ttc	cgc	atc	ctc	tgc	ggg	gaa	tgg	atc	gaa	aat	atg	tgg	gaa	tgt	2358	
Val	Phe	Arg	Ile	Leu	Cys	Gly	Glu	Trp	Ile	Glu	Asn	Met	Trp	Glu	Cys		
			765					770					775				
atg	caa	gaa	gcg	aat	gca	tca	tca	tca	ttg	tgt	gtt	att	gtc	ttc	ata	2406	
Met	Gln	Glu	Ala	Asn	Ala	Ser	Ser	Ser	Leu	Cys	Val	Ile	Val	Phe	Ile		
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Leu	Ile	Thr	Val	Ile	Gly	Lys	Leu	Val	Val	Leu	Asn	Leu	Phe	Ile	Ala		
		795					800					805					
tta	ctg	ctc	aat	tcc	ttt	agc	aat	gag	gaa	aga	aat	gga	aac	tta	gaa	2502	
Leu	Leu	Leu	Asn	Ser	Phe	Ser	Asn	Glu	Glu	Arg	Asn	Gly	Asn	Leu	Glu		
	810					815					820						
gga	gag	gcc	agg	aaa	act	aaa	gtc	cag	tta	gca	ctg	gat	cga	ttc	cgc	2550	
Gly	Glu	Ala	Arg	Lys	Thr	Lys	Val	Gln	Leu	Ala	Leu	Asp	Arg	Phe	Arg		
825					830				835						840		
cgg	gct	ttt	tgt	ttt	gtg	aga	cac	act	ctt	gag	cat	ttc	tgt	cac	aag	2598	
Arg	Ala	Phe	Cys	Phe	Val	Arg	His	Thr	Leu	Glu	His	Phe	Cys	His	Lys		
			845						850					855			
tgg	tgc	agg	aag	caa	aac	tta	cca	cag	caa	aaa	gag	gtg	gca	gga	ggc	2646	
Trp	Cys	Arg	Lys	Gln	Asn	Leu	Pro	Gln	Gln	Lys	Glu	Val	Ala	Gly	Gly		
			860					865					870				
tgt	gct	gca	caa	agc	aaa	gac	atc	att	ccc	ctg	gtc	atg	gag	atg	aaa	2694	
Cys	Ala	Ala	Gln	Ser	Lys	Asp	Ile	Ile	Pro	Leu	Val	Met	Glu	Met	Lys		

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aag acc ctg ggc gtc agg cat gat tgg act tgg ttg gca cca ctt gcg Lys Thr Leu Gly Val Arg His Asp Trp Thr Trp Leu Ala Pro Leu Ala 905 910 915 920			2790
gag gag gaa gat gac gtt gaa ttt tct ggt gaa gat aat gca cag cgc Glu Glu Glu Asp Asp Val Glu Phe Ser Gly Glu Asp Asn Ala Gln Arg 925 930 935			2838
atc aca caa cct gag cct gaa caa cag gcc tat gag ctc cat cag gag Ile Thr Gln Pro Glu Pro Glu Gln Gln Ala Tyr Glu Leu His Gln Glu 940 945 950			2886
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ttc tct gaa gat gag cct cat ctg acc ata cag gat ccc cga aag aag Phe Ser Glu Asp Glu Pro His Leu Thr Ile Gln Asp Pro Arg Lys Lys 970 975 980			2982
tct gat gtt acc agt ata cta tca gaa tgt agc acc att gat ctt cag Ser Asp Val Thr Ser Ile Leu Ser Glu Cys Ser Thr Ile Asp Leu Gln 985 990 995 1000			3030
gat ggc ttt gga tgg tta cct gag atg gtt ccc aaa aag caa cca Asp Gly Phe Gly Trp Leu Pro Glu Met Val Pro Lys Lys Gln Pro 1005 1010 1015			3075
gag aga tgt ttg ccc aaa ggc ttt ggt tgc tgc ttt cca tgc tgt Glu Arg Cys Leu Pro Lys Gly Phe Gly Cys Cys Phe Pro Cys Cys 1020 1025 1030			3120
agc gtg gac aag aga aag cct ccc tgg gtc att tgg tgg aac ctg Ser Val Asp Lys Arg Lys Pro Pro Trp Val Ile Trp Trp Asn Leu 1035 1040 1045			3165
cgg aaa acc tgc tac caa ata gtg aaa cac agc tgg ttt gag agc Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser 1050 1055 1060			3210
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gaa gat gtt cac ctt gag aac caa ccc aaa atc caa gaa tta cta Glu Asp Val His Leu Glu Asn Gln Pro Lys Ile Gln Glu Leu Leu 1080 1085 1090			3300
aat tgt act gac att att ttt aca cat att ttt atc ctg gag atg Asn Cys Thr Asp Ile Ile Phe Thr His Ile Phe Ile Leu Glu Met 1095 1100 1105			3345

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Val Leu Lys Trp Val Ala Phe Gly Phe Gly Lys Tyr Phe Thr Ser	
1110 1115 1120	
gcc tgg tgc tgc ctt gat ttc atc att gtg att gtc tct gtg acc	3435
Ala Trp Cys Cys Leu Asp Phe Ile Ile Val Ile Val Ser Val Thr	
1125 1130 1135	
acc ctc att aac tta atg gaa ttg aag tcc ttc cgg act cta cga	3480
Thr Leu Ile Asn Leu Met Glu Leu Lys Ser Phe Arg Thr Leu Arg	
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gca ctg agg cct ctt cgt gcg ctg tcc cag ttt gaa gga atg aag	3525
Ala Leu Arg Pro Leu Arg Ala Leu Ser Gln Phe Glu Gly Met Lys	
1155 1160 1165	
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Val Val Val Asn Ala Leu Ile Gly Ala Ile Pro Ala Ile Leu Asn	
1170 1175 1180	
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Val Leu Leu Val Cys Leu Ile Phe Trp Leu Val Phe Cys Ile Leu	
1185 1190 1195	
gga gta tac ttc ttt tct gga aaa ttt ggg aaa tgc att aat gga	3660
Gly Val Tyr Phe Phe Ser Gly Lys Phe Gly Lys Cys Ile Asn Gly	
1200 1205 1210	
aca gac tca gtt ata aat tat acc atc att aca aat aaa agt caa	3705
Thr Asp Ser Val Ile Asn Tyr Thr Ile Ile Thr Asn Lys Ser Gln	
1215 1220 1225	
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Cys Glu Ser Gly Asn Phe Ser Trp Ile Asn Gln Lys Val Asn Phe	
1230 1235 1240	
gac aat gtg gga aat gct tac ctc gct ctg ctg caa gtg gca aca	3795
Asp Asn Val Gly Asn Ala Tyr Leu Ala Leu Leu Gln Val Ala Thr	
1245 1250 1255	
ttt aag ggc tgg atg gat att ata tat gca gct gtt gat tcc aca	3840
Phe Lys Gly Trp Met Asp Ile Ile Tyr Ala Ala Val Asp Ser Thr	
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Glu Lys Glu Gln Gln Pro Glu Phe Glu Ser Asn Ser Leu Gly Tyr	
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Ile Tyr Phe Val Val Phe Ile Ile Phe Gly Ser Phe Phe Thr Leu	
1290 1295 1300	
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Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Gln Gln Gln	
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Lys Lys Leu Gly Gly	Gln Asp Ile Phe Met	Thr Glu Glu Gln Lys	
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aaa tac tat aat gca	atg aaa aaa tta gga	tcc aaa aaa cct caa	4065
Lys Tyr Tyr Asn Ala	Met Lys Lys Leu Gly	Ser Lys Lys Pro Gln	
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Lys Pro Ile Pro Arg	Pro Leu Asn Lys Cys	Gln Gly Leu Val Phe	
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gac ata gtc aca agc	cag atc ttt gac atc	atc atc ata agt ctc	4155
Asp Ile Val Thr Ser	Gln Ile Phe Asp Ile	Ile Ile Ile Ser Leu	
1365	1370	1375	
att atc cta aac atg	att agc atg atg gct	gaa tca tac aac caa	4200
Ile Ile Leu Asn Met	Ile Ser Met Met Ala	Glu Ser Tyr Asn Gln	
1380	1385	1390	
ccc aaa gcc atg aaa	tcc atc ctt gac cat	ctc aac tgg gtc ttt	4245
Pro Lys Ala Met Lys	Ser Ile Leu Asp His	Leu Asn Trp Val Phe	
1395	1400	1405	
gtg gtc atc ttt acg	tta gaa tgt ctc atc	aaa atc ttt gct ttg	4290
Val Val Ile Phe Thr	Leu Glu Cys Leu Ile	Lys Ile Phe Ala Leu	
1410	1415	1420	
agg caa tac tac ttc	acc aat ggc tgg aat	tta ttt gac tgt gtg	4335
Arg Gln Tyr Tyr Phe	Thr Asn Gly Trp Asn	Leu Phe Asp Cys Val	
1425	1430	1435	
gtc gtg ctt ctt tcc	att gtt agt aca atg	att tct acc ttg gaa	4380
Val Val Leu Leu Ser	Ile Val Ser Thr Met	Ile Ser Thr Leu Glu	
1440	1445	1450	
aat cag gag cac att	cct ttc cct ccg acg	ctc ttc aga att gtc	4425
Asn Gln Glu His Ile	Pro Phe Pro Pro Thr	Leu Phe Arg Ile Val	
1455	1460	1465	
cgc ttg gct cgg att	ggc cga atc ctg agg	ctt gtc cgg gct gca	4470
Arg Leu Ala Arg Ile	Gly Arg Ile Leu Arg	Leu Val Arg Ala Ala	
1470	1475	1480	
cga gga atc agg act	ctc ctc ttt gct ctg	atg atg tcg ctt cct	4515
Arg Gly Ile Arg Thr	Leu Leu Phe Ala Leu	Met Met Ser Leu Pro	
1485	1490	1495	
tct ctg ttc aac att	ggc ctt cta ctc ttt	ctg att atg ttt atc	4560
Ser Leu Phe Asn Ile	Gly Leu Leu Leu Phe	Leu Ile Met Phe Ile	
1500	1505	1510	
tat gcc att ctg ggt	atg aac tgg ttt tcc	aaa gtg aat cca gag	4605
Tyr Ala Ile Leu Gly	Met Asn Trp Phe Ser	Lys Val Asn Pro Glu	
1515	1520	1525	
tct gga atc gat gac	ata ttc aac ttc aag	act ttt gcc agc agc	4650

Ser Gly Ile Asp Asp	Ile Phe Asn Phe Lys	Thr Phe Ala Ser Ser	
1530	1535	1540	
atg ctc tgt ctc ttc	cag ata agc aca tca	gca ggt tgg gat tcc	4695
Met Leu Cys Leu Phe	Gln Ile Ser Thr Ser	Ala Gly Trp Asp Ser	
1545	1550	1555	
ctg ctc agc ccc atg	ctg cga tca aaa gaa	tca tgt aac tct tcc	4740
Leu Leu Ser Pro Met	Leu Arg Ser Lys Glu	Ser Cys Asn Ser Ser	
1560	1565	1570	
tca gaa aac tgc cac	ctc cct ggc ata gcc	aca tcc tac ttt gtc	4785
Ser Glu Asn Cys His	Leu Pro Gly Ile Ala	Thr Ser Tyr Phe Val	
1575	1580	1585	
agt tac att atc atc	tcc ttt ctc att gtt	gtc aac atg tac att	4830
Ser Tyr Ile Ile Ile	Ser Phe Leu Ile Val	Val Asn Met Tyr Ile	
1590	1595	1600	
gct gtg att tta gag	aac ttc aat aca gcc	act gaa gaa agt gag	4875
Ala Val Ile Leu Glu	Asn Phe Asn Thr Ala	Thr Glu Glu Ser Glu	
1605	1610	1615	
gac cct ttg ggt gaa	gat gac ttt gac ata	ttt tat gaa gtg tgg	4920
Asp Pro Leu Gly Glu	Asp Asp Phe Asp Ile	Phe Tyr Glu Val Trp	
1620	1625	1630	
gaa aag ttt gac cca	gaa gca aca caa ttt	atc aaa tat tct gcc	4965
Glu Lys Phe Asp Pro	Glu Ala Thr Gln Phe	Ile Lys Tyr Ser Ala	
1635	1640	1645	
ctt tct gac ttt gct	gat gcc ttg cct gag	cct ttg cgt gtc gca	5010
Leu Ser Asp Phe Ala	Asp Ala Leu Pro Glu	Pro Leu Arg Val Ala	
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Lys Pro Asn Lys Tyr	Gln Phe Leu Val Met	Asp Leu Pro Met Val	
1665	1670	1675	
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Ser Glu Asp Arg Leu	His Cys Met Asp Ile	Leu Phe Ala Phe Thr	
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gct agg gta ctc ggt	ggc tct gat ggc cta	gat agt atg aaa gca	5145
Ala Arg Val Leu Gly	Gly Ser Asp Gly Leu	Asp Ser Met Lys Ala	
1695	1700	1705	
atg atg gaa gag aag	ttc atg gaa gcc aat	cct ctc aag aag ttg	5190
Met Met Glu Glu Lys	Phe Met Glu Ala Asn	Pro Leu Lys Lys Leu	
1710	1715	1720	
tat gaa ccc ata gtc	acc acc acc aag aga	aag gaa gag gaa aga	5235
Tyr Glu Pro Ile Val	Thr Thr Thr Lys Arg	Lys Glu Glu Glu Arg	
1725	1730	1735	
ggg gct gct att att	caa aag gcc ttt cga	aag tac atg atg aag	5280
Gly Ala Ala Ile Ile	Gln Lys Ala Phe Arg	Lys Tyr Met Met Lys	

1740	1745	1750	
gtg acc aag ggt gac	caa ggt gac caa aat	gac ttg gaa aac ggg	5325
Val Thr Lys Gly Asp	Gln Gly Asp Gln Asn	Asp Leu Glu Asn Gly	
1755	1760	1765	
cct cat tca cca ctc	cag act ctt tgc aat	gga gac ttg tct agc	5370
Pro His Ser Pro Leu	Gln Thr Leu Cys Asn	Gly Asp Leu Ser Ser	
1770	1775	1780	
ttt ggg gtg gcc aag	ggc aag gtc cac tgt	gac tgagccctca	5413
Phe Gly Val Ala Lys	Gly Lys Val His Cys	Asp	
1785	1790		
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Ile Gln Lys Glu Lys Lys Lys Ser Lys Asp Gln Thr Gly Glu Val Pro			
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Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys			
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Leu Tyr Gly Asp Ile Pro Arg Glu Leu Ile Gly Lys Pro Leu Glu Asp			
65	70	75	80
Leu Asp Pro Phe Tyr Arg Asn His Lys Thr Phe Met Val Leu Asn Arg			
85	90	95	

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys His Ala Leu Phe Ile Phe
100 105 110

Gly Pro Phe Asn Ser Ile Arg Ser Leu Ala Ile Arg Val Ser Val His
115 120 125

Ser Leu Phe Ser Met Phe Ile Ile Gly Thr Val Ile Ile Asn Cys Val
130 135 140

Phe Met Ala Thr Gly Pro Ala Lys Asn Ser Asn Ser Asn Asn Thr Asp
145 150 155 160

Ile Ala Glu Cys Val Phe Thr Gly Ile Tyr Ile Phe Glu Ala Leu Ile
165 170 175

Lys Ile Leu Ala Arg Gly Phe Ile Leu Asp Glu Phe Ser Phe Leu Arg
180 185 190

Asp Pro Trp Asn Trp Leu Asp Ser Ile Val Ile Gly Ile Ala Ile Val
195 200 205

Ser Tyr Ile Pro Gly Ile Thr Ile Lys Leu Leu Pro Leu Arg Thr Phe
210 215 220

Arg Val Phe Arg Ala Leu Lys Ala Ile Ser Val Val Ser Arg Leu Lys
225 230 235 240

Val Ile Val Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asn Val
245 250 255

Ile Ile Leu Thr Phe Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln
260 265 270

Gln Leu Phe Met Gly Ser Leu Asn Leu Lys Cys Ile Ser Arg Asp Cys
275 280 285

Lys Asn Ile Ser Asn Pro Glu Ala Tyr Asp His Cys Phe Glu Lys Lys
290 295 300

Glu Asn Ser Pro Glu Phe Lys Met Cys Gly Ile Trp Met Gly Asn Ser
305 310 315 320

Ala Cys Ser Ile Gln Tyr Glu Cys Lys His Thr Lys Ile Asn Pro Asp

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Tyr	Asn	Tyr	Thr	Asn	Phe	Asp	Asn	Phe	Gly	Trp	Ser	Phe	Leu	Ala	Met
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Phe	Arg	Leu	Met	Thr	Gln	Asp	Ser	Trp	Glu	Lys	Leu	Tyr	Gln	Gln	Thr
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Leu	Arg	Thr	Thr	Gly	Leu	Tyr	Ser	Val	Phe	Phe	Phe	Ile	Val	Val	Ile
	370					375					380				
Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Ile	Asn	Leu	Thr	Leu	Ala	Val	Val	Thr
385					390					395					400
Met	Ala	Tyr	Glu	Glu	Gln	Asn	Lys	Asn	Val	Ala	Ala	Glu	Ile	Glu	Ala
			405						410					415	
Lys	Glu	Lys	Met	Phe	Gln	Glu	Ala	Gln	Gln	Leu	Leu	Lys	Glu	Glu	Lys
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		435					440					445			
Glu	Thr	Ser	Tyr	Phe	Thr	Pro	Lys	Lys	Arg	Lys	Leu	Phe	Gly	Asn	Lys
	450					455					460				
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465					470					475					480
Gly	Ser	Asp	Ser	Asp	Glu	Asp	Cys	Gln	Lys	Lys	Pro	Gln	Leu	Leu	Glu
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Gln	Thr	Lys	Arg	Leu	Ser	Gln	Asn	Leu	Ser	Leu	Asp	His	Phe	Asp	Glu
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	515						520					525			
Leu	Thr	Ile	Thr	Met	Lys	Glu	Gln	Glu	Lys	Ser	Gln	Glu	Pro	Cys	Leu
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Pro Gln Trp Leu Cys Val Lys Lys Val Leu Arg Thr Val Met Thr Asp
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Pro Phe Thr Glu Leu Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val
580 585 590

Phe Leu Ala Met Glu His His Lys Met Glu Ala Ser Phe Glu Lys Met
595 600 605

Leu Asn Ile Gly Asn Leu Val Phe Thr Ser Ile Phe Ile Ala Glu Met
610 615 620

Cys Leu Lys Ile Ile Ala Leu Asp Pro Tyr His Tyr Phe Arg Arg Gly
625 630 635 640

Trp Asn Ile Phe Asp Ser Ile Val Ala Leu Leu Ser Phe Ala Asp Val
645 650 655

Met Asn Cys Val Leu Gln Lys Arg Ser Trp Pro Phe Leu Arg Ser Phe
660 665 670

Arg Val Leu Arg Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn
675 680 685

Thr Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala Leu Gly Ser Leu
690 695 700

Thr Val Val Leu Val Ile Val Ile Phe Ile Phe Ser Val Val Gly Met
705 710 715 720

Gln Leu Phe Gly Arg Ser Phe Asn Ser Gln Lys Ser Pro Lys Leu Cys
725 730 735

Asn Pro Thr Gly Pro Thr Val Ser Cys Leu Arg His Trp His Met Gly
740 745 750

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Val Gln Ser Val Glu Ile Asp Met Phe Ser Glu Asp Glu Pro His Leu
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Trp	Val	Ile	Trp	Trp	Asn	Leu	Arg	Lys	Thr	Cys	Tyr	Gln	Ile	Val
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Lys	His	Ser	Trp	Phe	Glu	Ser	Phe	Ile	Ile	Phe	Val	Ile	Leu	Leu
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Phe	Gly	Lys	Cys	Ile	Asn	Gly	Thr	Asp	Ser	Val	Ile	Asn	Tyr	Thr
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Ile	Ile	Thr	Asn	Lys	Ser	Gln	Cys	Glu	Ser	Gly	Asn	Phe	Ser	Trp

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Tyr Ala Ala Val Asp Ser Thr Glu Lys Glu Gln Gln Pro Glu Phe				
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 Asp Glu Arg Asn Phe Arg Pro Phe Thr Phe Asp Ser Leu Ala Ala Ile
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Asn Thr Val Phe Leu Ala Met Glu His His Asn Met Asp Asn Ser Leu	
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Arg His Gly Trp Asn Ile Phe Asp Ser Ile Val Ala Leu Val Ser Leu	
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Ala Asp Val Leu Phe His Lys Leu Ser Lys Asn Leu Ser Phe Leu Ala	
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Ile Phe Gly Ser Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile	
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Ile Asp Asn Phe Asn Gln Gln Gln Lys Lys Leu Gly Gly Gln Asp	
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Ile Phe Met Thr Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys	
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aag tta gga acc aag aag cct caa aag ccc atc cca agg ccc ctg	4017
Lys Leu Gly Thr Lys Lys Pro Gln Lys Pro Ile Pro Arg Pro Leu	
1320 1325 1330	
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Asn Lys Cys Gln Ala Phe Val Phe Asp Leu Val Thr Ser Gln Val	
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Phe Asp Val Ile Ile Leu Gly Leu Ile Val Thr Asn Met Ile Ile	
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Met Met Ala Glu Ser Glu Gly Gln Pro Asn Glu Val Lys Lys Ile	
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Phe Asp Ile Leu Asn Ile Val Phe Val Val Ile Phe Thr Val Glu	
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tgt ctc atc aaa gtc ttt gct ttg agg caa cac tac ttc acc aat	4242
Cys Leu Ile Lys Val Phe Ala Leu Arg Gln His Tyr Phe Thr Asn	
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Gly Trp Asn Leu Phe Asp Cys Val Val Val Val Leu Ser Ile Ile	
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agt acc ttg gtt tct ggc ttg gag aac agc aac gtc ttc ccg ccc	4332
Ser Thr Leu Val Ser Gly Leu Glu Asn Ser Asn Val Phe Pro Pro	
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Thr Leu Phe Arg Ile Val Arg Leu Ala Arg Ile Gly Arg Ile Leu	
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aga ctg gtc cgg gcg gct cga gga atc agg aca ctc ctt ttc gcg	4422
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Leu Met Met Ser Leu Pro Ser Leu Phe Asn Ile Gly Leu Leu Leu	
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Phe Leu Val Met Phe Ile Tyr Ala Ile Phe Gly Met Asn Trp Phe	
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Ser Lys Val Lys Arg Gly Ser Gly Ile Asp Asp Ile Phe Asn Phe	
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Asp Thr Phe Ser Gly Ser Met Leu Cys Leu Phe Gln Ile Thr Thr	
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Ser Ala Gly Trp Asp Ala Leu Leu Asn Pro Met Leu Glu Ser Lys	
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Ala Ser Cys Asn Ser Ser Ser Gln Glu Ser Cys Gln Gln Pro Gln	
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Ile Ala Ile Val Tyr Phe Val Ser Tyr Ile Ile Ile Ser Phe Leu	
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Ile Val Val Asn Met Tyr Ile Ala Val Ile Leu Glu Asn Phe Asn	
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aca gcc aca gag gag agc gag gac ccc ctg ggc gaa gac gac ttt	4827

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Glu	Ile	Phe	Tyr	Glu	Ile	Trp	Glu	Lys	Phe	Asp	Pro	Glu	Ala	Thr	
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cag	ttc	atc	cag	tac	tca	tcc	ctc	tct	gac	ttc	gcc	gac	gcc	ctg	4917
Gln	Phe	Ile	Gln	Tyr	Ser	Ser	Leu	Ser	Asp	Phe	Ala	Asp	Ala	Leu	
1620						1625					1630				
ccc	gag	ccg	ttg	cgt	gtg	gcc	aag	ccc	aac	agg	ttt	cag	ttt	ctc	4962
Pro	Glu	Pro	Leu	Arg	Val	Ala	Lys	Pro	Asn	Arg	Phe	Gln	Phe	Leu	
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Met	Met	Asp	Leu	Pro	Met	Val	Met	Gly	Asp	Arg	Leu	His	Cys	Met	
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Asp	Val	Leu	Phe	Ala	Phe	Thr	Thr	Arg	Val	Leu	Gly	Asn	Ser	Ser	
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Gly	Leu	Asp	Thr	Met	Lys	Ala	Met	Met	Glu	Glu	Lys	Phe	Met	Glu	
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gcc	aat	cct	ttc	aag	aag	ttg	tac	gag	ccc	att	gtc	acc	acc	aca	5142
Ala	Asn	Pro	Phe	Lys	Lys	Leu	Tyr	Glu	Pro	Ile	Val	Thr	Thr	Thr	
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Lys	Arg	Lys	Glu	Glu	Glu	Glu	Cys	Ala	Ala	Val	Ile	Gln	Arg	Ala	
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Tyr	Arg	Arg	His	Met	Glu	Lys	Met	Ile	Lys	Leu	Lys	Leu	Lys	Gly	
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agg	tca	agt	tca	tcg	ctc	cag	gtg	ttt	tgc	aat	gga	gac	ttg	tct	5277
Arg	Ser	Ser	Ser	Ser	Leu	Gln	Val	Phe	Cys	Asn	Gly	Asp	Leu	Ser	
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Ser	Leu	Asp	Val	Pro	Lys	Ile	Lys	Val	His	Cys	Asp				
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35 40 45

Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
50 55 60

Leu Tyr Gly Asp Val Pro Pro Asp Leu Ile Ala Lys Pro Leu Glu Asp
65 70 75 80

Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
85 90 95

Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
100 105 110

Gly Pro Phe Asn Pro Ile Arg Ser Phe Met Ile Arg Ile Ser Val His
115 120 125

Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
130 135 140

Phe Met Ala Asn Asn Ser Ser Val Asp Ser Arg Pro Ser Ser Asn Ile
145 150 155 160

Pro Glu Tyr Val Phe Ile Gly Ile Tyr Val Leu Glu Ala Val Ile Lys
165 170 175

Ile Leu Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Tyr Leu Arg Asp
180 185 190

Pro Trp Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Pro
195 200 205

Cys Phe Leu Gly Asn Lys Val Asn Asn Leu Ser Thr Leu Arg Thr Phe
210 215 220

Arg Val Leu Arg Ala Leu Lys Ala Ile Ser Val Ile Ser Gly Leu Lys
225 230 235 240

Val Ile Val Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asp Val
245 250 255

Met Val Leu Thr Leu Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln
260 265 270

Gln Leu Phe Met Gly Ile Leu Ser Gln Lys Cys Ile Lys Asp Asp Cys
275 280 285

Gly Pro Asn Ala Phe Ser Asn Lys Asp Cys Phe Val Lys Glu Asn Asp
290 295 300

Ser Glu Asp Phe Ile Met Cys Gly Asn Trp Leu Gly Arg Arg Ser Cys
305 310 315 320

Pro Asp Gly Ser Thr Cys Asn Lys Thr Thr Phe Asn Pro Asp Tyr Asn
325 330 335

Tyr Thr Asn Phe Asp Ser Phe Gly Trp Ser Phe Leu Ala Met Phe Arg
340 345 350

Val Met Thr Gln Asp Ser Trp Glu Lys Leu Tyr Arg Gln Ile Leu Arg
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Thr Ser Gly Ile Tyr Phe Val Phe Phe Phe Val Val Val Ile Phe Leu
370 375 380

Gly Ser Phe Tyr Leu Leu Asn Leu Thr Leu Ala Val Val Thr Met Ala
385 390 395 400

Tyr Glu Glu Gln Asn Arg Asn Val Ala Ala Glu Thr Glu Ala Lys Glu
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Lys Met Phe Gln Glu Ala Gln Gln Leu Leu Arg Glu Glu Lys Glu Ala
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Leu Val Ala Met Gly Ile Asp Arg Thr Ser Leu Asn Ser Leu Gln Ala
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Ser Ser Phe Ser Pro Lys Lys Arg Lys Phe Phe Gly Ser Lys Thr Arg
450 455 460

Lys Ser Phe Phe Met Arg Gly Ser Lys Thr Ala Arg Ala Ser Ala Ser
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Asp Ser Glu Asp Asp Ala Ser Lys Asn Pro Gln Leu Leu Glu Gln Thr
485 490 495

Lys Arg Leu Ser Gln Asn Leu Pro Val Glu Leu Phe Asp Glu His Val
500 505 510

Asp Pro Leu His Arg Gln Arg Ala Leu Ser Ala Val Ser Ile Leu Thr
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Ile Thr Met Gln Glu Gln Glu Lys Ser Gln Glu Pro Cys Phe Pro Cys
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Gly Lys Asn Leu Ala Ser Lys Tyr Leu Val Trp Glu Cys Ser Pro Pro
545 550 555 560

Trp Leu Cys Ile Lys Lys Val Leu Gln Thr Ile Met Thr Asp Pro Phe
565 570 575

Thr Glu Leu Ala Ile Thr Ile Cys Ile Ile Val Asn Thr Val Phe Leu
580 585 590

Ala Met Glu His His Asn Met Asp Asn Ser Leu Lys Asp Ile Leu Lys
595 600 605

Ile Gly Asn Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu
610 615 620

Lys Ile Ile Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn

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His Lys Leu Ser	Lys Asn Leu Ser	Phe Leu Ala Ser	Leu Arg Val Leu			
	660	665	670			
Arg Val Phe Lys	Leu Ala Lys Ser	Trp Pro Thr Leu	Asn Thr Leu Ile			
	675	680	685			
Lys Ile Ile Gly	His Ser Val Gly	Ala Leu Gly	Asn Leu Thr Val Val			
	690	695	700			
Leu Thr Ile Val	Val Phe Ile Phe	Ser Val Val Gly	Met Arg Leu Phe			
	705	710	715			720
Gly Ala Lys Phe	Asn Lys Thr Cys	Ser Thr Ser Pro	Glu Ser Leu Arg			
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Arg Trp His Met	Gly Asp Phe Tyr	His Ser Phe Leu	Val Val Phe Arg			
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	755	760	765			
Met Glu Gly Ser	Pro Leu Cys Val	Ile Val Phe Val	Leu Ile Met Val			
	770	775	780			
Val Gly Lys Leu	Val Val Leu Asn	Leu Phe Ile Ala	Leu Leu Leu Asn			
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Ser Phe Ser Asn	Glu Glu Lys Asp	Gly Asn Pro Glu	Gly Glu Thr Arg			
	805	810	815			
Lys Thr Lys Val	Gln Leu Ala Leu	Asp Arg Phe Ser	Arg Ala Phe Tyr			
	820	825	830			
Phe Met Ala Arg	Ala Leu Gln Asn	Phe Cys Cys Lys	Arg Cys Arg Arg			
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Gln Asn Ser Pro	Lys Pro Asn Glu	Ala Thr Glu Ser	Phe Ala Gly Glu			
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Ser Arg Asp Thr Ala Thr Leu Asp Thr Arg Ser Trp Lys Glu Tyr Asp
865 870 875 880

Ser Glu Met Thr Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro
885 890 895

Leu Ala Lys Glu Glu Asp Asp Met Glu Cys Cys Gly Glu Cys Asp Ala
900 905 910

Ser Pro Thr Ser Gln Pro Ser Glu Glu Ala Gln Ala Cys Asp Leu Pro
915 920 925

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930 935 940

Glu Val Phe Ser Glu Glu Asp Pro Asn Leu Thr Ile Gln Ser Ala Arg
945 950 955 960

Lys Lys Ser Asp Ala Ala Ser Met Leu Ser Glu Cys Ser Thr Ile Asp
965 970 975

Leu Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Gln Lys
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Cys Lys Thr Ile Lys Lys Lys Ser Pro Trp Val Leu Trp Trp Asn
1010 1015 1020

Leu Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu
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Ser Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile
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Leu	Ser	Leu	Thr	Asn	Leu	Pro	Asn	Leu	Lys	Ser	Phe	Arg	Asn	Leu
1115						1120					1125			
Arg	Ala	Leu	Arg	Pro	Leu	Arg	Ala	Leu	Ser	Gln	Phe	Glu	Gly	Met
1130						1135					1140			
Lys	Val	Val	Val	Asn	Ala	Leu	Met	Ser	Ala	Ile	Pro	Ala	Ile	Leu
1145						1150					1155			
Asn	Val	Leu	Leu	Val	Cys	Leu	Ile	Phe	Trp	Leu	Ile	Phe	Cys	Ile
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1175						1180					1185			
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Val	Asn	Phe	Asp	Asn	Val	Gly	Asn	Ala	Tyr	Leu	Ala	Leu	Leu	Gln
1220						1225					1230			
Val	Ala	Thr	Tyr	Lys	Gly	Trp	Leu	Asp	Ile	Met	Asn	Ala	Ala	Val
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Asp	Ser	Arg	Gly	Lys	Asp	Glu	Gln	Pro	Ala	Phe	Glu	Ala	Asn	Leu
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Tyr	Ala	Tyr	Leu	Tyr	Phe	Val	Val	Phe	Ile	Ile	Phe	Gly	Ser	Phe
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Phe Val	Ser Tyr Ile Ile	Ile Ser Phe Leu	Ile Val	Val Asn Met
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Tyr Ile	Ala Val Ile Leu	Glu Asn Phe Asn	Thr Ala	Thr Glu Glu
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Ser Glu	Asp Pro Leu Gly	Glu Asp Asp Phe	Glu Ile	Phe Tyr Glu
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Ile Trp	Glu Lys Phe Asp	Pro Glu Ala Thr	Gln Phe	Ile Gln Tyr
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Ser Ser	Leu Ser Asp Phe	Ala Asp Ala Leu	Pro Glu	Pro Leu Arg
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Val Ala	Lys Pro Asn Arg	Phe Gln Phe Leu	Met Met	Asp Leu Pro
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Met Val	Met Gly Asp Arg	Leu His Cys Met	Asp Val	Leu Phe Ala
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Phe Thr	Thr Arg Val Leu	Gly Asn Ser Ser	Gly Leu	Asp Thr Met
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Lys Ala	Met Met Glu Glu	Lys Phe Met Glu	Ala Asn	Pro Phe Lys
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Lys Leu	Tyr Glu Pro Ile	Val Thr Thr Thr	Lys Arg	Lys Glu Glu
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Glu Glu	Cys Ala Ala Val	Ile Gln Arg Ala	Tyr Arg	Arg His Met
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 at nt 1264 and
 T>C at nt 4056

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Arg Pro Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala
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Ile Gln Lys Glu Arg Lys Lys Ser Lys Asp Lys Ala Ala Ala Glu Pro
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cag cct cgg cct cag ctt gac cta aag gcc tcc agg aag tta cct aag      192
Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
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Leu Tyr Gly Asp Ile Pro Pro Glu Leu Val Ala Lys Pro Leu Glu Asp
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Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
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Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
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ggg cct ttt aat ccc ctc aga agc tta atg att cgt atc tct gtc cat      384
Gly Pro Phe Asn Pro Leu Arg Ser Leu Met Ile Arg Ile Ser Val His
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Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
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Phe Met Ala Asn Ser Met Glu Arg Ser Phe Asp Asn Asp Ile Pro Glu
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Tyr Val Phe Ile Gly Ile Tyr Ile Leu Glu Ala Val Ile Lys Ile Leu
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gca aga ggc ttc att gtg gat gag ttt tcc ttc ctc cga gat ccg tgg      576
Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Phe Leu Arg Asp Pro Trp
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aac tgg ctg gac ttc att gtc att gga aca gcg atc gca act tgt ttt      624
Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Thr Cys Phe
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Pro Ala Ser Asn Lys Asp Cys Phe Glu Lys Glu Lys Asp Ser Glu Asp	
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His His Asn Met Asp Asp Asn Leu Lys Thr Ile Leu Lys Ile Gly Asn	
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Ser Arg Glu Lys Asp Glu Gln	Pro Asp Phe Glu Ala	Asn Leu Tyr	
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Ala Tyr Leu Tyr Phe Val Val	Phe Ile Ile Phe Gly	Ser Phe Phe	
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1670						1675					1680				
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Lys	Thr	Met	Met	Glu	Glu	Lys	Phe	Met	Glu	Ala	Asn	Pro	Phe	Lys	
1685						1690					1695				
aag	ctc	tac	gag	ccc	ata	gtc	acc	acc	acc	aag	agg	aag	gag	gag	5139
Lys	Leu	Tyr	Glu	Pro	Ile	Val	Thr	Thr	Thr	Lys	Arg	Lys	Glu	Glu	
1700						1705					1710				
gag	caa	ggc	gcc	gcc	gtc	atc	cag	agg	gcc	tac	cgg	aaa	cac	atg	5184
Glu	Gln	Gly	Ala	Ala	Val	Ile	Gln	Arg	Ala	Tyr	Arg	Lys	His	Met	
1715						1720					1725				
gag	aag	atg	gtc	aaa	ctg	agg	ctg	aag	gac	agg	tca	agt	tca	tcg	5229
Glu	Lys	Met	Val	Lys	Leu	Arg	Leu	Lys	Asp	Arg	Ser	Ser	Ser	Ser	
1730						1735					1740				
cac	cag	gtg	ttt	tgc	aat	gga	gac	ttg	tcc	agc	ttg	gat	gtg	gcc	5274
His	Gln	Val	Phe	Cys	Asn	Gly	Asp	Leu	Ser	Ser	Leu	Asp	Val	Ala	

1745 1750 1755
 aag gtc aag gtt cac aat gac tga 5298
 Lys Val Lys Val His Asn Asp
 1760 1765

 <210> 20 <211> 1765 <212> PRT <213> Rattus norvegicus <400> 20
 Met Glu Glu Arg Tyr Tyr Pro Val Ile Phe Pro Asp Glu Arg Asn Phe
 1 5 10 15

 Arg Pro Phe Thr Ser Asp Ser Leu Ala Ala Ile Glu Lys Arg Ile Ala
 20 25 30

 Ile Gln Lys Glu Arg Lys Lys Ser Lys Asp Lys Ala Ala Ala Glu Pro
 35 40 45

 Gln Pro Arg Pro Gln Leu Asp Leu Lys Ala Ser Arg Lys Leu Pro Lys
 50 55 60

 Leu Tyr Gly Asp Ile Pro Pro Glu Leu Val Ala Lys Pro Leu Glu Asp
 65 70 75 80

 Leu Asp Pro Phe Tyr Lys Asp His Lys Thr Phe Met Val Leu Asn Lys
 85 90 95

 Lys Arg Thr Ile Tyr Arg Phe Ser Ala Lys Arg Ala Leu Phe Ile Leu
 100 105 110

 Gly Pro Phe Asn Pro Leu Arg Ser Leu Met Ile Arg Ile Ser Val His
 115 120 125

 Ser Val Phe Ser Met Phe Ile Ile Cys Thr Val Ile Ile Asn Cys Met
 130 135 140

 Phe Met Ala Asn Ser Met Glu Arg Ser Phe Asp Asn Asp Ile Pro Glu
 145 150 155 160

 Tyr Val Phe Ile Gly Ile Tyr Ile Leu Glu Ala Val Ile Lys Ile Leu
 165 170 175

 Ala Arg Gly Phe Ile Val Asp Glu Phe Ser Phe Leu Arg Asp Pro Trp
 180 185 190

Asn Trp Leu Asp Phe Ile Val Ile Gly Thr Ala Ile Ala Thr Cys Phe
195 200 205

Pro Gly Ser Gln Val Asn Leu Ser Ala Leu Arg Thr Phe Arg Val Phe
210 215 220

Arg Ala Leu Lys Ala Ile Ser Val Ile Ser Gly Leu Lys Val Ile Val
225 230 235 240

Gly Ala Leu Leu Arg Ser Val Lys Lys Leu Val Asp Val Met Val Leu
245 250 255

Thr Leu Phe Cys Leu Ser Ile Phe Ala Leu Val Gly Gln Gln Leu Phe
260 265 270

Met Gly Ile Leu Asn Gln Lys Cys Ile Lys His Asn Cys Gly Pro Asn
275 280 285

Pro Ala Ser Asn Lys Asp Cys Phe Glu Lys Glu Lys Asp Ser Glu Asp
290 295 300

Phe Ile Met Cys Gly Thr Trp Leu Gly Ser Arg Pro Cys Pro Asn Gly
305 310 315 320

Ser Thr Cys Asp Lys Thr Thr Leu Asn Pro Asp Asn Asn Tyr Thr Lys
325 330 335

Phe Asp Asn Phe Gly Trp Ser Phe Leu Ala Met Phe Arg Val Met Thr
340 345 350

Gln Asp Ser Trp Glu Arg Leu Tyr Arg Gln Ile Leu Arg Thr Ser Gly
355 360 365

Ile Tyr Phe Val Phe Phe Phe Val Val Val Ile Phe Leu Gly Ser Phe
370 375 380

Tyr Leu Leu Asn Leu Thr Leu Ala Val Val Thr Met Ala Tyr Glu Glu
385 390 395 400

Gln Asn Arg Asn Val Ala Ala Glu Thr Glu Ala Lys Glu Lys Met Phe
405 410 415

Gln Glu Ala Gln Gln Leu Leu Arg Glu Glu Lys Glu Ala Leu Val Ala

420	425	430
Met Gly Ile Asp Arg Ser Ser Leu Asn Ser Leu Gln Ala Ser Ser Phe		
435	440	445
Ser Pro Lys Lys Arg Lys Phe Phe Gly Ser Lys Thr Arg Lys Ser Phe		
450	455	460
Phe Met Arg Gly Ser Lys Thr Ala Gln Ala Ser Ala Ser Asp Ser Glu		
465	470	475
Asp Asp Ala Ser Lys Asn Pro Gln Leu Leu Glu Gln Thr Lys Arg Leu		
485	490	495
Ser Gln Asn Leu Pro Val Asp Leu Phe Asp Glu His Val Asp Pro Leu		
500	505	510
His Arg Gln Arg Ala Leu Ser Ala Val Ser Ile Leu Thr Ile Thr Met		
515	520	525
Gln Glu Gln Glu Lys Phe Gln Glu Pro Cys Phe Pro Cys Gly Lys Asn		
530	535	540
Leu Ala Ser Lys Tyr Leu Val Trp Asp Cys Ser Pro Gln Trp Leu Cys		
545	550	555
Ile Lys Lys Val Leu Arg Thr Ile Met Thr Asp Pro Phe Thr Glu Leu		
565	570	575
Ala Ile Thr Ile Cys Ile Ile Ile Asn Thr Val Phe Leu Ala Val Glu		
580	585	590
His His Asn Met Asp Asp Asn Leu Lys Thr Ile Leu Lys Ile Gly Asn		
595	600	605
Trp Val Phe Thr Gly Ile Phe Ile Ala Glu Met Cys Leu Lys Ile Ile		
610	615	620
Ala Leu Asp Pro Tyr His Tyr Phe Arg His Gly Trp Asn Val Phe Asp		
625	630	635
Ser Ile Val Ala Leu Leu Ser Leu Ala Asp Val Leu Tyr Asn Thr Leu		
645	650	655

Ser Asp Asn Asn Arg Ser Phe Leu Ala Ser Leu Arg Val Leu Arg Val
660 665 670

Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile
675 680 685

Ile Gly His Ser Val Gly Ala Leu Gly Asn Leu Thr Val Val Leu Thr
690 695 700

Ile Val Val Phe Ile Phe Ser Val Val Gly Met Arg Leu Phe Gly Thr
705 710 715 720

Lys Phe Asn Lys Thr Ala Tyr Ala Thr Gln Glu Arg Pro Arg Arg Arg
725 730 735

Trp His Met Asp Asn Phe Tyr His Ser Phe Leu Val Val Phe Arg Ile
740 745 750

Leu Cys Gly Glu Trp Ile Glu Asn Met Trp Gly Cys Met Gln Asp Met
755 760 765

Asp Gly Ser Pro Leu Cys Ile Ile Val Phe Val Leu Ile Met Val Ile
770 775 780

Gly Lys Leu Val Val Leu Asn Leu Phe Ile Ala Leu Leu Leu Asn Ser
785 790 795 800

Phe Ser Asn Glu Glu Lys Asp Gly Ser Leu Glu Gly Glu Thr Arg Lys
805 810 815

Thr Lys Val Gln Leu Ala Leu Asp Arg Phe Arg Arg Ala Phe Ser Phe
820 825 830

Met Leu His Ala Leu Gln Ser Phe Cys Cys Lys Lys Cys Arg Arg Lys
835 840 845

Asn Ser Pro Lys Pro Lys Glu Thr Thr Glu Ser Phe Ala Gly Glu Asn
850 855 860

Lys Asp Ser Ile Leu Pro Asp Ala Arg Pro Trp Lys Glu Tyr Asp Thr
865 870 875 880

Asp Met Ala Leu Tyr Thr Gly Gln Ala Gly Ala Pro Leu Ala Pro Leu
885 890 895

Ala Glu Val Glu Asp Asp Val Glu Tyr Cys Gly Glu Gly Gly Ala Leu
900 905 910

Pro Thr Ser Gln His Ser Ala Gly Val Gln Ala Gly Asp Leu Pro Pro
915 920 925

Glu Thr Lys Gln Leu Thr Ser Pro Asp Asp Gln Gly Val Glu Met Glu
930 935 940

Val Phe Ser Glu Glu Asp Leu His Leu Ser Ile Gln Ser Pro Arg Lys
945 950 955 960

Lys Ser Asp Ala Val Ser Met Leu Ser Glu Cys Ser Thr Ile Asp Leu
965 970 975

Asn Asp Ile Phe Arg Asn Leu Gln Lys Thr Val Ser Pro Lys Lys Gln
980 985 990

Pro Asp Arg Cys Phe Pro Lys Gly Leu Ser Cys His Phe Leu Cys His
995 1000 1005

Lys Thr Asp Lys Arg Lys Ser Pro Trp Val Leu Trp Trp Asn Ile
1010 1015 1020

Arg Lys Thr Cys Tyr Gln Ile Val Lys His Ser Trp Phe Glu Ser
1025 1030 1035

Phe Ile Ile Phe Val Ile Leu Leu Ser Ser Gly Ala Leu Ile Phe
1040 1045 1050

Glu Asp Val Asn Leu Pro Ser Arg Pro Gln Val Glu Lys Leu Leu
1055 1060 1065

Arg Cys Thr Asp Asn Ile Phe Thr Phe Ile Phe Leu Leu Glu Met
1070 1075 1080

Ile Leu Lys Trp Val Ala Phe Gly Phe Arg Arg Tyr Phe Thr Ser
1085 1090 1095

1310						1315						1320
Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Cys Gln Ala Phe												
1325						1330				1335		
Val Phe Asp Leu Val Thr Ser Gln Val Phe Asp Val Ile Ile Leu												
1340						1345				1350		
Gly Leu Ile Val Leu Asn Met Ile Ile Met Met Ala Glu Ser Ala												
1355						1360				1365		
Asp Gln Pro Lys Asp Val Lys Lys Thr Phe Asp Ile Leu Asn Ile												
1370						1375				1380		
Ala Phe Val Val Ile Phe Thr Ile Glu Cys Leu Ile Lys Val Phe												
1385						1390				1395		
Ala Leu Arg Gln His Tyr Phe Thr Asn Gly Trp Asn Leu Phe Asp												
1400						1405				1410		
Cys Val Val Val Val Leu Ser Ile Ile Ser Thr Leu Val Ser Arg												
1415						1420				1425		
Leu Glu Asp Ser Asp Ile Ser Phe Pro Pro Thr Leu Phe Arg Val												
1430						1435				1440		
Val Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Val Arg Ala												
1445						1450				1455		
Ala Arg Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu												
1460						1465				1470		
Pro Ser Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe												
1475						1480				1485		
Ile Tyr Ala Ile Phe Gly Met Ser Trp Phe Ser Lys Val Lys Lys												
1490						1495				1500		
Gly Ser Gly Ile Asp Asp Ile Phe Asn Phe Glu Thr Phe Thr Gly												
1505						1510				1515		
Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp												
1520						1525				1530		

Thr	Leu	Leu	Asn	Pro	Met	Leu	Glu	Ala	Lys	Glu	His	Cys	Asn	Ser
1535						1540					1545			
Ser	Ser	Gln	Asp	Ser	Cys	Gln	Gln	Pro	Gln	Ile	Ala	Val	Val	Tyr
1550						1555					1560			
Phe	Val	Ser	Tyr	Ile	Ile	Ile	Ser	Phe	Leu	Ile	Val	Val	Asn	Met
1565						1570					1575			
Tyr	Ile	Ala	Val	Ile	Leu	Glu	Asn	Phe	Asn	Thr	Ala	Thr	Glu	Glu
1580						1585					1590			
Ser	Glu	Asp	Pro	Leu	Gly	Glu	Asp	Asp	Phe	Glu	Ile	Phe	Tyr	Glu
1595						1600					1605			
Val	Trp	Glu	Lys	Phe	Asp	Pro	Glu	Ala	Ser	Gln	Phe	Ile	Gln	Tyr
1610						1615					1620			
Ser	Ala	Leu	Ser	Asp	Phe	Ala	Asp	Ala	Leu	Pro	Glu	Pro	Leu	Arg
1625						1630					1635			
Val	Ala	Lys	Pro	Asn	Lys	Phe	Gln	Phe	Leu	Val	Met	Asp	Leu	Pro
1640						1645					1650			
Met	Val	Met	Gly	Asp	Arg	Leu	His	Cys	Met	Asp	Val	Leu	Phe	Ala
1655						1660					1665			
Phe	Thr	Thr	Arg	Val	Leu	Gly	Asp	Ser	Ser	Gly	Leu	Asp	Thr	Met
1670						1675					1680			
Lys	Thr	Met	Met	Glu	Glu	Lys	Phe	Met	Glu	Ala	Asn	Pro	Phe	Lys
1685						1690					1695			
Lys	Leu	Tyr	Glu	Pro	Ile	Val	Thr	Thr	Thr	Lys	Arg	Lys	Glu	Glu
1700						1705					1710			
Glu	Gln	Gly	Ala	Ala	Val	Ile	Gln	Arg	Ala	Tyr	Arg	Lys	His	Met
1715						1720					1725			
Glu	Lys	Met	Val	Lys	Leu	Arg	Leu	Lys	Asp	Arg	Ser	Ser	Ser	Ser
1730						1735					1740			

His Gln Val Phe Cys Asn Gly Asp Leu Ser Ser Leu Asp Val Ala
 1745 1750 1755

Lys Val Lys Val His Asn Asp
 1760 1765

<210> 21
 <211> 8
 <212> PRT
 <213> Rattus norvegicus

<400> 21

Ile Asp His His His His His His
 1 5 8

<210> 22
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide for
 raising antibodies

<400> 22
 Cys Asn Gly Asp Leu Ser Ser Phe Gly Val Ala Lys Gly Lys Val His
 1 5 10 15

<210> 23
 <211> 18
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide for
 raising antibodies

<400> 23
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 1 5 10 15

Asn Asp

<210> 24
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 24
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 <210> 25
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 25
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 <210> 26
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 26
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 <210> 27
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 27
 cctaccacta ctttcgccga gg 22

 <210> 28
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 28
 tacgaagtaa atgtaaccga gtga 24

 <210> 29
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<212> DNA
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 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 29
 ctcggttaca ttacttcgt agt 23

 <210> 30
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 <210> 31
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 <210> 32
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 gccatggaac accacaatat g 21

 <210> 33
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 <400> 33
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<210> 34
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

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 <210> 35
 <211> 41
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: PCR primer

 <400> 35
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